

What is claimed is:

1    1. A low noise block downconverter for use in a satellite broadcasting system  
2 receiver, said low noise block downconverter comprising:

3            a. a first low noise amplifier for providing an amplified k-band RF  
4 signal;  
5            b. a local frequency oscillator for providing a local oscillator signal;  
6            c. a high frequency diplexer for providing a diplexer output signal, said  
7 high frequency diplexer being electrically connected to said low noise amplifier,  
8 where said high frequency diplexer further comprises at least a first diplexer input  
9 for receiving said amplified k-band RF signal, a second diplexer input for  
10 receiving said local oscillator signal, and a diplexer output for providing a diplexer  
11 output signal substantially equal to the sum of the amplified RF signal and the  
12 local oscillator signal; and  
13            d. a downconverter for receiving said diplexer output signal, wherein  
14 said downconverter provides an intermediate frequency output.

2. A low noise block downconverter according to claim 1 wherein said high frequency diplexer comprises a resistive summing junction.

3. A low noise block downconverter according to claim 1, wherein said high frequency diplexer comprises a distributed element frequency selective junction.

4. A low noise block downconverter according to claim 1, wherein said high frequency diplexer comprises a lumped element frequency selective junction.

5. A low noise block downconverter according to claim 1 wherein said downconverter comprises an integrated circuit chip.
6. A low noise block downconverter according to claim 5 wherein said integrated circuit chip comprises at least a first diode and a second diode, wherein said first diode and said second diode form an anti-parallel diode pair, said anti-parallel diode pair being electrically connected to high frequency diplexer.
7. A low noise block downcoverter according to claim 6 wherein said anti-parallel diode pair produces an intermediate frequency.
8. A low noise block downconverter according to claim 7 wherein said local oscillator signal is from about 9.75 GHz to about 11.3 GHz.
9. A low noise block downconverter according to claim 8, wherein said intermediate frequency is from about 950 MHz to about 2.15 GHz.
10. A low noise block downconverter according to claim 9 wherein said integrated circuit chip is configured in a sub-harmonically pumped arrangement.
11. A k-band mixer for use in a low noise block downconverter comprising:

- 2           a.        a high frequency diplexer for providing a diplexer output signal, said  
3       high frequency diplexer having at least a first diplexer input for receiving a k-band  
4       RF signal, a second diplexer input for receiving a local oscillator signal,  
5           b.        a local frequency oscillator for providing said local oscillator signal  
6       to said second diplexer input; and  
7           c.        a downconverter configured to downconvert said diplexer output  
8       signal to provide an intermediate frequency output.

12.      A k-band mixer according to claim 11 wherein said high frequency diplexer comprises a resistive summer.

13.      A k-band mixer according to claim 14 wherein said high frequency diplexer comprises a lumped element selective junction.

14.      A k-band mixer according to claim 13 wherein said high frequency diplexer comprises a distributed frequency selective junction.

15.      A k-band mixer according to claim 14 wherein said downconverter comprises an integrated circuit chip, said integrated circuit chip having at least a first chip input, a second chip input and a chip output.

16.      A k-band mixer according to claim 15 wherein said integrated chip further comprises at least a first diode and a second diode, wherein said first diode and

said second diode form an anti-parallel diode pair, said anti-parallel diode pair being electrically connected to said diplexer.

17. A k-band frequency mixer according to claim 16 wherein said high frequency diplexer combines said k-band RF signal and said local oscillator signal to produce a combined high frequency signal, said combined high frequency signal being provided to said anti-parallel diode pair.

18. A k-band frequency mixer according to claim 17 wherein said anti-parallel diode pair produces an intermediate frequency.

19. A k-band frequency mixer according to claim 18 wherein said local oscillator signal is from about 9.75 GHz to about 11.3 GHz.

20. A k-band mixer according to claim 19, wherein said intermediate frequency is from about 950 MHz to about 2.15 GHz.

21. A k-band mixer according to claim 20, wherein said integrated circuit chip is configured in a sub-harmonically pumped arrangement.

1    22. A method for downconverting a k-band radio frequency, said method  
2 comprising:

3        combining a local oscillator frequency and a k-band RF frequency to  
4 produce a high frequency signal; and

5           inputting the high frequency signal into a downconverter to produce an  
6 intermediate frequency of from about 950 MHz to about 2.15 GHz, said  
7 downconverter comprising an integrated circuit chip containing an anti-parallel  
8 diode pair.

24. A method according to claim 23 wherein method further comprises the step of amplifying said intermediate frequency to a predetermined frequency.

This document contains neither recommendations nor conclusions of the Federal Communications Commission. No official communication has been issued with respect to the subject matter herein. The term "FCC ID" does not mean "Granted FCC ID".